FORM PTO-1390 (REV 5-93) — U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371

ATTORNEY'S DOCKET NUMBER: 951/49163

U.S. APPLICATION NO (if known, see 37 CFR 1.5): 09/623895

INTERNATIONAL APPLICATION NO.	INTERNATIONAL FILING DATE	PRIORITY DATE CLAIMED
PCT/EP99/01166	23 February 1999 (23.02.99)	10 March 1998 (10.03.98)

TITLE OF INVENTION: **DATA BUS FOR A PLURALITY OF NODES**

APPLICANT(S) FOR DO/EO/US: **Karel SMUK; Robert GRIESSBACH; Martin PELLER; and Josef BERWANGER**

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. [X] This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. [ ] This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. [ ] This express request to begin national examination procedures (35 U.S.C. 371(f) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. [X] A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. [X] A copy of the International Application as filed (35 U.S.C. 371(c)(2)).
   a. [X] is transmitted herewith (required only if not transmitted by the International Bureau).
   b. [ ] has been transmitted by the International Bureau
   c. [ ] is not required, as the application was filed in the United States Receiving Office (RO/US)
6. [X] A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. [ ] Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
   a. [ ] are transmitted herewith (required only if not transmitted by the International Bureau).
   b. [ ] have been transmitted by the International Bureau.
   c. [ ] have not been made; however, the time limit for making such amendments has NOT expired.
   d. [ ] have not been made and will not be made.
8. [ ] A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. [X] An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)). **(Unexecuted)**
10. [ ] A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Item 11. to 16. below concern other document(s) or information included:

11. [ ] An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. [ ] An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. [X] A FIRST preliminary amendment.
    [ ] A SECOND or SUBSEQUENT preliminary amendment.
14. [X] A substitute specification.
15. [ ] A change of power of attorney and/or address letter.
16. [X] Other items or information: **1 sheet of formal drawings (sole Figure); 1st page of published International Application; International Search Report and translation thereof**

U.S. APPLICATION NO. (if known, see 37 CFR 1.5) 09/623895	INTERNATIONAL APPLICATION NO PCT/EP99/01166	ATTORNEY'S DOCKET NUMBER 951/49163	
17. [ ] The following fees are submitted:		CALCULATIONS	PTO USE ONLY
Basic National Fee (37 CFR 1.492(a)(1)-(5)):			
Search Report has been prepared by the EPO or JPO $840.00		**840.00**	
International preliminary examination fee paid to USPTO (37 CFR 1.482) ... $670.00			
No international preliminary examination fee paid to USPTO (37 CFR 1.482) but international search fee paid to USPTO (37 CFR 1.445(a)(2) $760.00			
Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37CFR 1.445(a)(2) paid to USPTO ..... $ 970.00			
International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(2)-(4) $96.00			
ENTER APPROPRIATE BASIC FEE AMOUNT =		$ **840.00**	
Surcharge of $130.00 for furnishing the oath or declaration later than [ ] 20 [ ] 30 months from the earliest claimed priority date (37 CFR 1.492(e)).		$ **130.00**	

Claims	Number Filed	Number Extra	Rate	
Total Claims	6-20=	0	X $18.00	$
Independent Claims	2-3=	0	X $78.00	$
Multiple dependent claims(s) (if applicable)			+ $260.00	$
TOTAL OF ABOVE CALCULATIONS =				$ **130.00**
Reduction by 1/2 for filing by small entity, if applicable. Verified Small Entity statement must also be filed. (Note 37 CFR 1.9, 1.27, 1.28).				$
SUBTOTAL =				$ **970.00**
Processing fee of $130.00 for furnishing the English translation later than [ ] 20 [ ] 30 months from the earliest claimed priority date (37 CFR 1.492(f)). +				$
TOTAL NATIONAL FEE =				$ **970.00**
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28,3.31). $40.00 per property +				$
TOTAL FEE ENCLOSED =				$ **970.00**
			Amount to be: refunded	$
			charged	$

a. [X] A check in the amount of $ **970.00** for the filing fee is enclosed

b. [ ] Please charge my Deposit Account No. _____ in the amount of $_____ to cover the above fees. A duplicate copy of this sheet is enclosed.

c. [X] The Commissioner is hereby authorized to charge any additional fees, which may be required, or credit any overpayment to Deposit Account No. 05-1323 (Attorney Docket No. **951/49163**). A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:
Evenson, McKeown, Edwards & Lenahan, P.L.L.C.
1200 G Street, N.W., Suite 700
Washington, D.C. 20005
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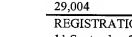

SIGNATURE
Vincent J. Sunderdick
NAME
29,004
REGISTRATION NUMBER
11 September 2000
DATE

Attorney Docket: 951/49163
PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: MARTIN PELLER ET AL.

Serial No.: NOT YET ASSIGNED PCT No.: PCT/EP99/01166

Filed: September 11, 2000

Title: DATA BUS FOR A PLURALITY OF NODES

PRELIMINARY AMENDMENT

Box PCT APPLICATION
Commissioner for Patents
Washington, D.C. 20231

Sir:

Please enter the following amendments to the specification, claims and abstract prior to the examination of the application.

IN THE SPECIFICATION:

A substitute specification is submitted herewith.

IN THE CLAIMS:

Please cancel Claims 1-5 and add new claims 6-10 as follows:

--6. A communication arrangement for connecting together a plurality of nodes, said arrangement comprising:

at least one opto-electronic transducer each connected to one of said plurality of nodes, each transducer including a means for generating an electrical output signal in response to an optical input signal from one of said nodes; and

a second means for determining a relative value of said electrical output signal, wherein said second means outputs a second electrical signal as an error signal when said relative value of said electrical signal is less than a predetermined value.

7. A method for determining errors in data transmission among a plurality of nodes connected to one another, said method comprising the steps of:

providing at least one optical module for converting an input optical signal from one of said nodes to an output electrical signal;

determining a relative value of said output electrical signal;

comprising said relative value to a base value; and

outputting an error signal when said relative value is less than said base value.

8. The method according to Claim 7,

wherein said error signal is stored in a memory.

9. The method according to Claim 7, including the step of reading out a status of said memory element.

10. The method according to Claim 7, wherein said memory element is addressable.--

IN THE ABSTRACT:

Please add an Abstract of the Disclosure submitted herewith on a separate page.

REMARKS

Entry of the amendments to the specification, claims and abstract before examination of the application is respectfully requested.

If there are any questions regarding this Preliminary Amendment or this application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

It is respectfully requested that, if necessary to effect a timely response, this paper be considered as a Petition for an Extension of Time sufficient to effect a timely response and

shortages in other fees, be charged, or any overpayment in fees be credited, to the Account of Evenson, McKeown, Edwards & Lenahan, P.L.L.C., Deposit Account No. 05-1323 (Docket #951/49163).

Respectfully submitted,

September 11, 2000

Vincent J. Sunderdick
Registration No. 29,004

VJS/rrt
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& LENAHAN, P.L.L.C.
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-- **ABSTRACT OF THE DISCLOSURE**

An apparatus and method for detecting optical defects in optical bus systems which use optical modules in communication with a plurality of nodes connected to each other. Deterioration of the optical transmission quality is detected as a resulting deterioration in an electrical output signal and noted deterioration is stored and read out. --

09/623895
533 Rec'd PCT/PTO 11 SEP 2000

English Translation
PCT/EP99/01166

Data Bus for a Plurality of Nodes

The invention relates to a data bus for a plurality of nodes that are connected to one another via a star coupler. Such a data bus is known from the unpublished German patent application 19720401. Herein, the nodes are connected to the data bus via transmitter/sender modules. For optical bus systems, aging of the transmitter diodes or frequent reverse bending fatigue of the optical fiber or damage thereto can lead to a reduction of luminous power to the receiver diode, thereby resulting in malfunctions in the bus traffic. Such an error cannot be automatically detected and diagnosed.

The object of the invention is to provide a data bus of the aforementioned art that allows a degradation of transmission quality to be detected.

The object of the invention is achieved by the means of Claim 1.

Degradation of the optical transmission quality can be detected by the transmitter/receiver module. Said degradation is characterized, for example, by excessive attenuation or by the difference between dark current and photocurrent (useful current).

An advantageous development of the invention is described in Claim 2. In this manner, the frequency of faulty data transmission can be determined.

A further advantageous development of the invention is given in Claim 3. Addressability of the memory element allows the simple detection of which node(s) caused a faulty data transmission. To this end, for example, the status of said memory element can be read out by a microcontroller assigned to the star coupler, via a serial interface (SPI, for example).

Finally, the memory element, for example after a faulty transmission or after readout by the microcontroller, can be reset. A subsequently occurring faulty data transmission can be detected and distinguished from the preceding error.

The invention is further illustrated by means of a single figure. Said figure shows a detail representation of a data bus according to the invention whereby the mode of transmission of the nodes is monitored.

At a data bus D are represented two nodes T_n and T_{n+1} that are connected via S/E (transmit/receive) modules S/E_n and S/E_{n+1}. Said S/E_n and S/E_{n+1} modules convert optical messages in electric form received from said T_n and T_{n+1} nodes and relay these signals Di_n, Di_{n+1} as input signals to a logical decision gate (AND Gate 1) as the central component of a star coupler K. The number of inputs and outputs of said AND Gate 1 corresponds to the number of bus nodes. The output of said AND Gate drives all inputs (Do_n, Do_{n+1}) of said S/E_n and S/E_{n+1} modules. Said modules convert these electrical signals into optical signals and transmit same to said T_n and T_{n+1} nodes via optical transmission segments, not shown.

Degradation of the optical transmission quality (excessive attenuation, difference between dark current and photocurrent) can be detected by the transmit/receive module S/E_n or S/E_{n+1}. During a low level at the optical data input of said module, a detected error is reported at the data output of the star coupler via a brief low impulse as an additional input signal Di_n, Di_n+1.

This error state is stored at each input of the star coupler in a buffer (7). To each signal input is assigned a counter (8) which, within the scope of a transmission, is incremented by one if an error is reported by the corresponding S/E module. Said counters can be read out and reset via a serial interface (SPI, for example) of a microcontroller. With this function, the optical transmission paths of all bus nodes can be diagnosed.

Data Bus for a Plurality of Nodes

Patent Claims

1. Data bus for a plurality of nodes that are connected to one another via a star coupler, characterized in that said nodes are connected to optoelectric transducers via an optical transmission segment, said transducers being connected on the load side or on the line side and being situated on said star coupler, that said transducers generate input signals of said star coupler in electrical form, and that said transducers determine the change and/or the absolute value of the electrical useful signal and output an electrical signal to said star coupler when there is a deviation by a given magnitude.

2. Data bus according to Claim 1, characterized by a memory element for the signal of the individual optoelectric transducer.

3. Data bus according to Claim 1, characterized in that the memory element is addressable.

4. Data bus according to Claim 1 or 2, characterized in that the status of the memory element can be read out.

5. Data bus according to one of Claims 1 through 3, characterized in that the memory elements can be reset.

[key to figure]

S/E Modul n	=	transmit/receive module n
S/E Modul n+1	=	transmit/receive module n+1
Zähler	=	counter
SPI-Schnittstelle und Steuerblock	=	SPI interface and control block

TITLE OF THE INVENTION

DATA BUS FOR A PLURALITY OF NODES

BACKGROUND AND SUMMARY OF THE INVENTION

This application claims the priority of Germany Patent Document 198 10 292.5, filed March 10 1998 and PCT/EP99/0116, filed February 23, 1999, the disclosures of which are expressly incorporated by reference herein.

The invention relates to a data bus for a plurality of nodes that are connected to one another via a star coupler. Such a data bus is known from the unpublished German patent application 19720401. Herein, the nodes are connected to the data bus via transmitter/sender modules. For optical bus systems, aging of the transmitter diodes or frequent reverse bending fatigue of the optical fiber or damage thereto can lead to a reduction of luminous power to the receiver diode, thereby resulting in malfunctions in the bus traffic. Such an error cannot be automatically detected and diagnosed.

The object of the invention is to provide a data bus of the aforementioned art that detects any degradation of transmission quality.

Degradation of the optical transmission quality can be detected by the transmitter/receiver module. This degradation is characterized, for example, by excessive attenuation or by the difference between dark current and photocurrent (useful current).

According to an advantageous development of the invention, the frequency of faulty data transmission can be determined.

In another advantageous development of the invention, addressability of the memory element allows the simple detection of which of the node(s) caused a faulty data transmission. As an example, the status of the memory element can be read out by a microcontroller assigned to the star coupler, via a serial interface (SPI, for example).

Subsequently, the memory element, for example, after a faulty transmission or after readout by the microcontroller, can be reset. Thus, the subsequently occurring faulty data transmission can be detected and distinguished from the preceding error.

Other objects, advantages and novel features of the present invention will become apparent from the following detailed description of the invention when considered in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention is illustrated by the single figure which shows detail representation of a data bus according to the invention whereby the mode of transmission of the nodes is monitored.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Two nodes T_n and T_{n+1} are connected via S/E (transmit/receive) modules S/E_n and S/E_{n+1}. The S/E_n and S/E_{n+1} modules convert optical messages in electric form received from said T_n and T_{n+1} nodes and relay the signals Di_n, Di_{n+1} as input signals to a logical decision gate (AND Gate 1) as the central component of a star coupler K. The number of inputs and outputs of AND Gate 1 corresponds to the number of bus nodes. The output of AND Gate drives all inputs (Do_n, Do_{n+1}) of the S/E_n and S/E_{n+1} modules. The modules convert these electrical signals into optical signals for transmission to the T_n and T_{n+1} nodes via optical transmission segments.

Degradation of the optical transmission quality due to excessive attenuation or difference between dark current and photocurrentU, can be detected by the transmit/receive module S/E_n or S/E_{n+1}. During a low level at the optical data input of the module, a detected error is reported at the data output of the star coupler via a brief low impulse as an additional input signal Di_n, Di_n+1.

This error state is stored at each input of the star coupler in a buffer (7). A counter is assigned to each signal input. The counter 8 is, within the time of a transmission, incremented by one if an error is reported by the corresponding S/E module. The counters can be read out and reset via a serial interface (SPI, for example) of a microcontroller. With this function, the optical transmission paths of all bus nodes can be diagnosed.

The foregoing disclosure has been set forth merely to illustrate the invention and is not intended to be limiting. Since modifications of the disclosed embodiments incorporating the spirit and substance of the invention may occur to persons skilled in the art, the invention should be construed to include everything within the scope of the appended claims and equivalents thereof.

WHAT IS CLAIMED IS:

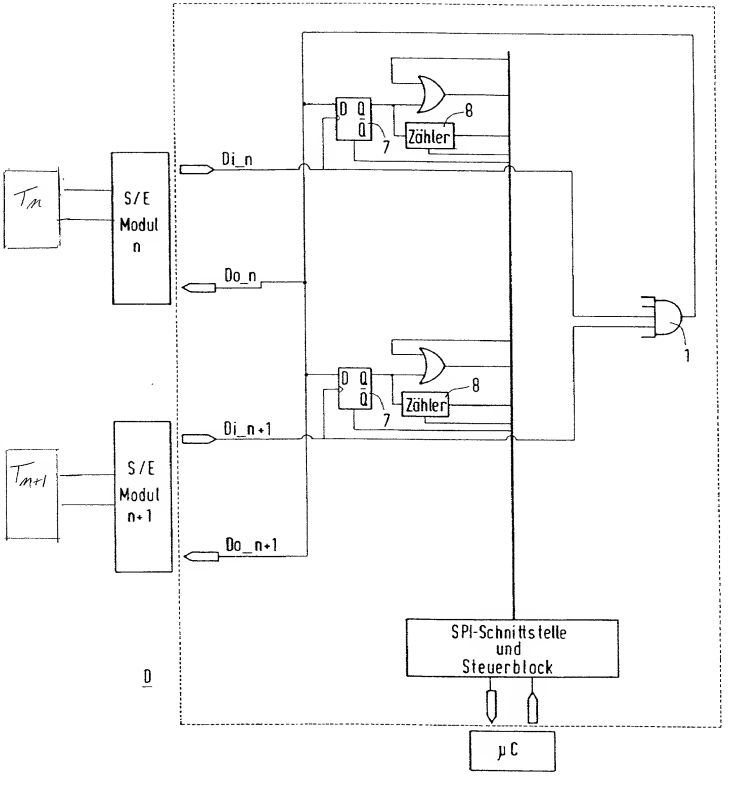
1. Data bus for a plurality of nodes that are connected to one another via a star coupler, characterized in that said nodes are connected to optoelectric transducers via an optical transmission segment, said transducers being connected on the load side or on the line side and being situated on said star coupler, that said transducers generate input signals of said star coupler in electrical form, and that said transducers determine the change and/or the absolute value of the electrical useful signal and output an electrical signal to said star coupler when there is a deviation by a given magnitude.

2. Data bus according to Claim 1, characterized by a memory element for the signal of the individual optoelectric transducer.

3. Data bus according to Claim 1, characterized in that the memory element is addressable.

4. Data bus according to Claim 1 or 2, characterized in that the status of the memory element can be read out.

5. Data bus according to one of Claims 1 through 3, characterized in that the memory elements can be reset.


Tn
S/E Modul n
Di_n
Do_n
D Q
Q
7
8
Zähler
1
Tn+1
S/E Modul n+1
Di_n+1
Do_n+1
SPI-Schnittstelle und Steuerblock
µC
D

COMBINED DECLARATION FOR PATENT APPLICATION AND POWER OF ATTORNEY
(includes Reference to PCT International Applications)

ATTORNEY'S DOCKET NUMBER

951/49163

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

Data Bus For A Plurality of Nodes

the specification of which (check only one item below):

[ ] is attached hereto.

[ ] was filed as United States application
Serial No. _____
on _____
and was amended
on _____ (if applicable).

[X] was filed as PCT international application
Number PCT/EP99/01166
on February 23, 1999
and was amended under PCT Article 19
on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations. §1.56(a).

I hereby claim foreign priority benefits under Title 35, United State Code, §119 of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed:

PRIOR FOREIGN/PCT APPLICATION(S) AND ANY PRIORITY CLAIMS UNDER 35 U.S.C. 119:

COUNTRY (if PCT indicate PCT)	APPLICATION NUMBER	DATE OF FILING (day, month, year)	PRIORITY CLAIMED UNDER 35 USC 119
Germany	198 10 292.5	10 March 1998	[X] Yes [ ] No
			[ ] Yes [ ] No
			[ ] Yes [ ] No
			[ ] Yes [ ] No
			[ ] Yes [ ] No

Combined Declaration For Patent Application and Power of Attorney (Continued)
(includes Reference to PCT international Applications

ATTORNEY'S DOCKET NUMBER

951/49163

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) or PCT international application(s) designating the United States of America that is/are listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in that/those prior application(s) in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application(s) and the national of PCT international filing date of this application:

PRIOR U.S. APPLICATIONS OR PCT INTERNATIONAL APPLICATIONS DESIGNATING THE U.S. FOR BENEFIT UNDER 35 U.S.C. 120

U.S. APPLICATIONS		STATUS *(Check one)*		
U.S. APPLICATION NUMBER	U.S. FILING DATE	PATENTED	PENDING	ABANDONED

PCT APPLICATIONS DESIGNATING THE U.S.					
PCT APPLICATION NO	PCT FILING DATE	U.S. SERIAL NUMBERS ASSIGNED (IF ANY)			

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. (List name and registration number)

Martin Fleit, Reg. No. 16,900; Herbert I. Cantor, Reg. No. 24,392; James F. McKeown, Reg. No. 25,406; Donald D. Evenson, Reg. No. 26,160; Joseph D. Evans, Reg. No. 26,269; Gary R. Edwards, Reg. No. 31,824; Jeffrey D. Sanok, Reg. No. 32,169; and Richard R. Diefendorf, Reg. No. 32,390

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Washington, D.C. 20005

Direct Telephone Calls to: *(name and telephone number)*
(202) 628-8800

201	FULL NAME OF INVENTOR	FAMILY NAME SMUK	FIRST GIVEN NAME Karel	SECOND GIVEN NAME
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202	FULL NAME OF INVENTOR	FAMILY NAME GRIESSBACH	FIRST GIVEN NAME Robert	SECOND GIVEN NAME
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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

SIGNATURE OF INVENTOR 201	SIGNATURE OF INVENTOR 202	SIGNATURE OF INVENTOR 203
Karel Smuk	Robert Griessbach	Martin Peller
DATE 30.08.2000	Date 18.09.2000	DATE 08/28/2000

Combined Declaration For Patent Application and Power of Attorney (Continued)
(includes Reference to PCT international Applications

ATTORNEY'S DOCKET NUMBER

951/49163

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) or PCT international application(s) designating the United States of America that is/are listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in that/those prior application(s) in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application(s) and the national of PCT international filing date of this application:

PRIOR U.S. APPLICATIONS OR PCT INTERNATIONAL APPLICATIONS DESIGNATING THE U.S. FOR BENEFIT UNDER 35 U.S.C. 120

U.S. APPLICATIONS		STATUS *(Check one)*		
U.S. APPLICATION NUMBER	U.S. FILING DATE	PATENTED	PENDING	ABANDONED

PCT APPLICATIONS DESIGNATING THE U.S.					
PCT APPLICATION NO	PCT FILING DATE	U.S. SERIAL NUMBERS ASSIGNED (IF ANY)			

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. (List name and registration number)

Herbert I. Cantor, Reg. No. 24,392; James F. McKeown, Reg. No. 25,406; Donald D. Evenson, Reg. No. 26,160; Joseph D. Evans, Reg. No. 26,269; Gary R. Edwards, Reg. No. 31,824; and Jeffrey D. Sanok, Reg. No. 32,169

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	FULL NAME OF INVENTOR	FAMILY NAME BERWANGER	FIRST GIVEN NAME Josef	SECOND GIVEN NAME
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	FULL NAME OF INVENTOR	FAMILY NAME	FIRST GIVEN NAME	SECOND GIVEN NAME
205	RESIDENCE & CITIZENSHIP	CITY	STATE OR FOREIGN COUNTRY	COUNTRY OF CITIZENSHIP
	POST OFFICE ADDRESS	POST OFFICE ADDRESS	CITY	STATE & ZIP CODE/COUNTRY
	FULL NAME OF INVENTOR	FAMILY NAME	FIRST GIVEN NAME	SECOND GIVEN NAME
206	RESIDENCE & CITIZENSHIP	CITY	STATE OR FOREIGN COUNTRY	COUNTRY OF CITIZENSHIP
	POST OFFICE ADDRESS	POST OFFICE ADDRESS	CITY	STATE & ZIP CODE/COUNTRY

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

SIGNATURE OF INVENTOR 204	SIGNATURE OF INVENTOR 205	SIGNATURE OF INVENTOR 206
Josef Berwanger		
DATE 28.08.2000	Date	DATE